

FURANE PRODUCTS COMPANY

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a subsidiary of
ROHM AND HAAS ADVANCED MATERIALS COMPANY

SAFETY PRECAUTIONS

To Be Used In Handling
Epoxy and Urethane Resins

EP-54-8-D

TECHNICAL DATA SHEET

There are two components which make up most epoxy resin systems:

1. The RESIN (with or without filler). (Sometimes labeled "A" Component.)
2. The HARDENER, in a fluid or paste-like consistency. (Sometimes labeled "B" Component.)

RESIN

There are several types of epoxy resins—some are safe to handle, others are not safe and should not contact the skin. Some individuals may show allergic tendencies with these materials and should follow precautionary measures noted below. Some resins may have diluents added to facilitate their processing, and these diluents may be harmful or noxious in odor. In either case, follow precautionary measures below.

HARDENER

Hardeners, or cure agents as they are called, differ in their ability to cure resins, as well as their tendency to cause skin irritation or dermatitis. Most room temperature set hardeners are based on polyamines (such as diethylene triamine). If proper precautions are followed, hardeners can usually be handled without difficulty. Safety hardeners are now available, though infrequently an individual shows an allergic reaction to these. This usually appears after repeated or prolonged contact with the hardener. The elevated temperature curing agents are generally aromatic amine or acid anhydrides. Most aromatic amines will tend to discolor the skin. Follow precautions noted below.

Since epoxy formulations have varying degrees of hazard, the Society of the Plastics Industry (SPI) has produced a guide for classification of products for the benefit of the industrial user. With this knowledge, the user should be able to safely handle these products. The hazard category is given in terms of degrees as follows:

- Class 1 - Practically non-irritating
- Class 2 - Mildly irritating
- Class 3 - Moderately irritating
- Class 4 - Strong sensitizer
- Class 5 - Extremely irritating
- Class 6 - Suspected carcinogen in animals.

PRECAUTIONARY MEASURES (Read Carefully)

1. Mix and apply materials in well ventilated areas, preferably with a forced air draft to carry away fumes. Ovens used to heat cure epoxies should be safely ventilated to outside areas.
2. Avoid contact of materials with the skin. Use rubber gloves, preferably with a cloth liner, to absorb perspiration.
3. Wear protective clothing when material contact is anticipated. Long rubber or vinyl coated gloves with cloth interiors are suggested, and goggles or eye shields to protect the eyes if splashing of the hardener occurs.
4. Observe good personal hygiene. Avoid contaminating clothing or the inside of gloves. Use soap and warm water at frequent intervals to clean hands and do not use strong cleaning solvents such as acetone or methyl ethyl ketone which dissolve protective oils from the skin. If cleaning of epoxy resin from clothing is necessary, a 50:50 mixture of denatured alcohol and toluene is suggested. Use denatured alcohol only to clean hands or skin.
5. Maintain good housekeeping and do not leave deposits of epoxy resins or hardeners on work areas, bottles, door-knobs, etc. Wipe off immediately with paper towels or rags. Use disposable mixing containers and throw-aways wherever possible.
6. Some individuals find that the application of barrier creams to hands and face is desirable before beginning work. (West Disinfectant 411 and Kerodex are among creams found satisfactory at Furane. Your physician can recommend others.) Reapply barrier creams after washing hands.
7. Should skin afflictions or irritations appear, qualified medical help must be obtained. He should be informed that skin irritation could have been caused by aliphatic polyamines. In uncomplicated cases, the skin irritations will disappear quickly, and in serious cases, it may require a few days to clear. In general, irritations may reappear when work is resumed, unless adequate protection is followed.

IMPORTANT NOTICE REGARDING THIS INFORMATION

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale.

Suggestions for uses of our products or the inclusion of descriptive material from patents and the citation of specific patents in this publication should not be understood as recommending the use of our products in violation of any patent or as permission or license to use any patents of Furane Products Company.

Persons who are known to be particularly susceptible should be immediately transferred to work which entails no risk whatsoever of dermatitis.

8. These materials are for professional and industrial use only and should be kept away from children.

9. If you have any doubts or skin irritations, see your doctor for professional guidance.

SAFETY PRECAUTIONS WHEN USING URETHANES

The general precautions applicable to handling the components of an epoxy system are applicable to the handling of urethanes. Please read and put into practice recommendations shown above.

Urethane reaction materials which involve isocyanates are potentially hazardous in both the liquid and vapor states. They may act as irritants to the skin and mucous membranes, especially the eyes and upper respiratory organs, where in some allergic individuals asthma-like attacks may occur. Concentrations below the odor threshold may affect sensitive persons who are subject to hay fever and asthma. If you suspect problems or show skin sensitivity, see your doctor for professional guidance.

Skin exposure should be avoided, and accidental spillage must be thoroughly removed by washing with soap and water. Eyes should be irrigated with large quantities of water and a physician consulted. To avoid hazards when working continually in a urethane atmosphere, protective clothing, eye shields, and gloves are suggested, as well as outside air-supplied respirators where vapor concentrations are high.

There are certain types of resins and hardeners which are considered more toxic than others. In keeping with industry requirements, a special precautionary label is

affixed to the containers. The language of the label is as follows:

"DANGER—Prolonged or repeated contact of liquid or breathing of vapors or mists may cause delayed and serious injury. Do not get on skin or clothing. Avoid inhalation of vapor or mists. In case of skin contact, wash thoroughly with soap and water. Remove contaminated clothing and wash thoroughly before reuse."

The following notice applies to Furane's resin systems:

NOTICE

The suggestions and methods described in individual product technical bulletins, information sheets, or explanatory labels have been based upon careful laboratory investigations. Since operating conditions in the fabricator's plant are beyond our control, Furane Products Co. cannot assume responsibility for any risks, or liability, due to any personal injury or property damage which may result from the use or handling of its products whether or not in accordance with directions. The buyer assumes all risk and liability from such handling, storage, or use of these materials and accepts and uses these materials on these conditions.

It is recommended that experimental samples of urethane and epoxy resins and hardeners be evaluated before production applications commence in order to familiarize personnel with curing and handling properties of the materials. For experimental and production use of urethane and epoxy resins and hardeners, the importance of cleanliness, protective clothing, and good ventilation should be emphasized.

In the event any individuals show any allergic tendencies to the materials used, consult your physician or plant safety department at once for professional advice.

WARRANTIES:

Except for a warranty that materials substantially comply with the data presented in the technical bulletin (the basis for this substantial compliance is to be determined by the standard quality control tests generally performed by Furane), all materials are sold "as is" and without any warranty expressed or implied as to merchantability, fitness for a particular purpose, patent, trade mark or copyright infringement, or as to any other matter. Buyer waives all rights against Furane arising by operation of tort or contract law or otherwise, whether or not such rights arise by reason of the active or passive negligence of Furane. Furane's liability shall not be greater in amount than the price paid to Furane of specific material sold, which is found to be defective. Any sale of the materials shall be subject to the terms and conditions of Furane's invoice. Trial samples of Furane's products or formulations should be evaluated by Buyer before production use. Buyer should fully understand processing characteristics, toxicity of compounds, and cured properties and performance of the materials.